

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

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PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

(PCT Rule 43bis.1)

Applicant's or agent's file reference 218	Date of mailing <i>(day/month/year)</i> 09 SEPTEMBER 2004 (09.09.2004)	
FOR FURTHER ACTION See paragraph 2 below		
International application No. PCT/KR2004/001086	International filing date <i>(day/month/year)</i> 11 MAY 2004 (11.05.2004)	Priority date <i>(day/month/year)</i> 06 DECEMBER 2003 (06.12.2003)
International Patent Classification (IPC) or both national classification and IPC IPC7 C08G 61/00, C12P 1/00		
Applicant KOREA RESEARCH INSTITUTE OF CHEMICAL TECHNOLOGY et al		

1. This opinion contains indications relating to the following items:
- ☒ Box No. I Basis of the opinion
 - ☐ Box No. II Priority
 - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - ☐ Box No. IV Lack of unity of invention
 - ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - ☐ Box No. VI Certain documents cited
 - ☐ Box No. VII Certain defects in the international application
 - ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.
For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/KR Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer LEE, Suk Ju Telephone No. 82-42-481-8149
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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/KR2004/001086

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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**WRITTEN OPINION OF THE
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International application No.
PCT/KR2004/001086

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-8	YES
	Claims	None	NO
Inventive step (IS)	Claims	1-8	YES
	Claims	None	NO
Industrial applicability (IA)	Claims	1-8	YES
	Claims	None	NO

2. Citations and explanations :

Reference is made to the following documents:

D1: US 4,900,671 A

D2: US 5,824,414 A

D3: JP 2002-201245 A

D1 relates to a process for the preparation of a phenolic resin which comprises reacting a phenol with a peroxidase or an oxidase enzyme and peroxide in an organic solvent containing medium to generate phenolic radicals which react to form a phenolic resin.

D2 relates to phenols reacting with hydrogen peroxide in a solution comprising an organic solvent compatible with water, a peroxide and a dispersing agent to obtain spherical polyphenol particles.

D3 relates to a production method for a solid resol type phenol resin whereby a resol type phenol resin not containing nitrogen component can be easily obtained as a solid.

The subject matter of claims 1-6 differs from the disclosure of D1-D3 mainly in that phenothiazine mediator is used in the process for preparing a phenolic resin.

The subject matter of claims 7-8 differs from the disclosure of D1-D3 mainly in that a phenolic resin manufactured by the method of claims 1-6 has a double bond of lipid group as a side chain.

None of the documents D1-D3 teach or suggest such a phenothiazine mediator, and a phenol resin having a double bond of lipid group as a side chain. In addition, it cannot be considered obvious to a person skilled in the art, with the knowledge of cited documents, to use phenothiazine as a mediator to increase the yield of a phenolic resin. A phenolic resin having a double bond of lipid group as a side chain easily facilitates radical curing reaction, thereby forming film of paint and improving anti-fouling effect.

Therefore, claims 1-8 of the present application are considered to meet the requirement of Article 33(2) and 33(3).

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